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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/586,897

07/21/2006

Francois Lacombe

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EXAMINER

SAHLE, MAHIDERE S

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/586,897	<b>Applicant(s)</b> LACOMBE ET AL.	
	<b>Examiner</b> MAHIDERE S. SAHLE	<b>Art Unit</b> 2873	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 July 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/01/08</u> .  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Claims 1-24 are pending in this application.

#### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

#### ***Information Disclosure Statement***

Acknowledgement is made of receipt of Information Disclosure Statement(s) (PTO-1449) filed 07/01/08. An initialed copy is attached to this Office Action.

#### ***Claim Objections***

Claim 17 is objected to because of the following informalities: “the method according to claim 1”, but claim 1 is a device claim. Appropriate correction is required. For the purpose of examination, claim 17 is assumed to be dependent upon claim 11.

Claim 19 is objected to because of the following informalities: “analyser” rather than “analyzer” and “defocused” rather than “defocused”. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 and 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Fercher (USP No. 5,877,856).

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Regarding claim 1, Fercher discloses a device for measuring the contrast of fringes in a full-field Michelson interferometer (abstract, col. 3, lines 53-54) having at least one reference arm and one measurement arm co-operating with an output arm in order to produce an optical coherence tomography (OCT) system (see figure 1, abstract), said device comprising: means for deflecting (7) two incoming perpendicular polarizations in two different emerging directions (see figure 1), said means for deflecting (7) being arranged within the output arm interferometer as a substitution for a single polarizer (see figure 1).

Regarding claim 2, Fercher discloses wherein the means for deflection comprise a Wollaston prism (col. 5, lines 21-26).

Regarding claim 3, Fercher discloses wherein it is arranged to carry out measurements for path differences differing by  $\lambda/2$  or  $\lambda/4$  (col. 5, lines 38-42).

Regarding claim 4, Fercher discloses wherein it is arranged to obtain at least two measurements, strictly simultaneous and in phase opposition (abstract).

Regarding claim 11, Fercher discloses a method for measuring the contrast of fringes in a full-field Michelson interferometer (abstract, col. 3, lines 53-54) including at least one reference arm and one measurement arm co-operating with an output arm to produce an optical coherence tomography system (see figure 1, abstract), the method comprising a deflection of two incoming perpendicular polarizations in two different emerging directions (see figure 1), by means of a Wollaston prism situated in said output arm (see figure 1, col. 5, lines 21-26).

Regarding claim 12, Fercher discloses further including measurements for path differences differing by  $\lambda/2$  or  $\lambda/4$  (col. 5, lines 38-42).

Regarding claim 13, Fercher discloses further including at least two measurements, strictly simultaneous and in phase opposition (abstract).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims **5-10 and 14-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fercher (USP No. 5,877,856).

Regarding claim 5, Fercher discloses wherein it is arranged to carry out measurements (see figure 2, col. 3, lines 44-48), and in that it also comprises means for

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separating a beam entering into the detection output arm into at least two separate beams (see figure 1, col. 1, lines 46-50), means of generating, in one of these two beams, an additional delay of  $\lambda/4$  between the polarizations originating from the measurement arm and the reference arm of the interferometer (col. 4, lines 32-34), and means for reintroducing together the two beams thus processed into the Wollaston prism such that, on output from the latter, there are then four light beams (see figure 3). Fercher discloses the claimed invention except for carrying out four measurements. It is known in the art that the number of measurements is controlled as disclosed by Fercher, and at each position the light intensity reflectance is measured. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the device of Fercher with carrying out four measurements for the purpose of detecting the multiple intensities at each position in order to obtain the desired tomographic result.

Regarding claim 6, Fercher discloses wherein the separator means comprise a single non-polarizing separator plate (7) (see figure 3).

Regarding claim 7, Fercher discloses wherein the delaying means comprise a quarter-wave plate (col. 7, lines 29-34).

Regarding claim 8, Fercher discloses wherein the Wollaston prism is arranged in a pupil plane (col. 5, lines 66-67, col. 6, lines 1-2).

Regarding claim 9, Fercher discloses wherein it also comprises means for arbitrarily orienting (3) the polarizations of four incident beams relative to the Wollaston prism's (18) own axes (see figure 3).

Regarding claim 10, Fercher discloses wherein the means for orienting comprise a half-wave plate (19) preceding the Wollaston prism (18) (see figure 3).

Regarding claim 14, Fercher discloses further including measurements (see figure 3, col. 3, lines 44-48), a separation into two of a beam entering the output arm (see figure 3, col. 1, lines 46-50), a generation, in one of the two beams produced, of an additional delay of  $\lambda/4$  between the polarizations originating from the measurement arm and the reference arm of the interferometer (see figure 3, col. 4, lines 32-34), and a reintroduction of the two beams thus processed into the Wollaston prism such that, on output from the latter, there are then four light beams (see figure 3). Fercher discloses the claimed invention except for four measurements. It is known in the art that the number of measurements is controlled, as disclosed by Fercher, and at each position the light intensity reflectance is measured. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method of Fercher with four measurements for the purpose of detecting the multiple intensities at each position in order to obtain the desired tomographic result.

Regarding claim 15, Fercher discloses further including an arbitrary orientation (3) of the polarizations of the four incident beams relative to the Wollaston prism's (18) own axes (see figure 3).

Regarding claim 16, Fercher discloses wherein the measurements on the four beams are carried out simultaneously (col. 3, lines 44-48, 58-59).

Claims **17-20 and 22-24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fercher (USP No. 5,877,856) in view of Wei et al. (USPG Pub 2003/0218755).

Regarding claim 17, Fercher discloses a measurement arm (col. 3, lines 6-8). Fercher discloses the claimed invention except for a compensation for the effects of focal chromatism of the eye. In the same field of endeavor, Wei et al. discloses a compensation for the effects of focal chromatism of the eye (paragraph 0027). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method of Fercher with a compensation for the effects of focal chromatism of the eye of Wei et al. for the purpose of correcting chromatic aberration (paragraph 0027).

Regarding claim 18, Fercher discloses a reference arm (col. 3, lines 38-39). Fercher discloses the claimed invention except for means for compensating for the dispersion of the path differences. In the same field of endeavor, Wei et al. discloses means for compensating for the dispersion of the path differences (paragraph 0027). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method of Fercher with means for compensating for the dispersion of the path differences of Wei et al. for the purpose of correcting chromatic aberration (paragraph 0027).

Regarding claim 19, Fercher discloses the claimed invention except for further including a control of a wave front analyser obliging it to work in defocussed mode. In the same field of endeavor, Wei et al. discloses a control of an analyser (paragraph



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0040). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method of Fercher with a control of an analyzer of Wei et al. for the purpose of providing the desired analysis. Fercher and Wei et al. disclose the claimed invention except for a wave front analyzer working in defocused mode. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex parte Masham, 2 USPQ2d - 164 7 (1987). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the method of Fercher and Wei et al. with a wave front analyzer working in defocused mode for the purpose of providing the desired analysis and tomographic results.

Regarding claim 20, Fercher discloses a system for examining the eye by in vivo tomography (abstract), comprising: - a Michelson interferometer, comprising at least one measurement arm and one reference arm co-operating with an output arm in order to produce a full-field OCT setup (see figure 1, col. 3, lines 50-55), - adaptive optical means (col. 3, lines 56-64), arranged between the measurement arm of the interferometer and an eye to be examined or within said measurement arm (see figure 1), and - means of detection (11) (see figure 3), arranged downstream of the interferometer or within its output arm (see figure 3), making it possible to carry out the interferometric measurement according to the optical coherence tomography (OCT) principle (abstract), and a device for measuring the contrast of fringes in a full-field Michelson interferometer (col. 3, lines 50-55), said device comprising in the output arm

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means for deflecting (18) two incoming polarizations in two different emerging directions (see figure 3). Fercher discloses the claimed invention except for carrying out the correction of the wavefronts originating from the eye as well as those reaching the eye. In the same field of endeavor, Wei et al. discloses carrying out the correction of the wavefronts originating from the eye as well as those reaching the eye (paragraph 0027). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the system of Fercher with carrying out the correction of the wavefronts originating from the eye as well as those reaching the eye of Wei et al. for the purpose of correcting chromatic aberration (paragraph 0027).

Regarding claim 22, Fercher discloses the claimed invention except for the reference source is inserted into the optical path between the adaptive optical means and the eye to be examined. In the same field of endeavor, Wei et al. discloses wherein the reference source is inserted into the optical path between the adaptive optical means and the eye to be examined (see figure 2, paragraph 0029). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the system of Fercher with reference source is inserted into the optical path between the adaptive optical means and the eye to be examined of Wei et al. for the purpose of correcting chromatic aberration (paragraph 0027).

Regarding claim 23, Fercher discloses the claimed invention except for further including, in the measurement arm, means for compensating for the effects of focal chromatism of the eye. In the same field of endeavor, Wei et al. discloses further including, in the measurement arm, means for compensating for the effects of focal

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chromatism of the eye (paragraph 0027). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the system of Fercher with including, in the measurement arm, means for compensating for the effects of focal chromatism of the eye of Wei et al. for the purpose of correcting chromatic aberration (paragraph 0027).

Regarding claim 24, Fercher discloses the claimed invention except for further including, in the reference arm, means for compensating for the dispersion of the path differences. In the same field of endeavor, Wei et al. discloses further including, in the reference arm, means for compensating for the dispersion of the path differences (paragraph 0027). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the system of Fercher with including, in the reference arm, means for compensating for the dispersion of the path differences of Wei et al. for the purpose of correcting chromatic aberration (paragraph 0027).

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fercher (USP No. 5,877,856) in view of Wei et al. (USPG Pub 2003/0218755) as applied to claim 20 above, and further in view of Agonis et al. (USP No. 5,883,692).

Regarding claim 21, Fercher and Wei et al. disclose and teach the system as is set forth above for claim 20 except for further including a sighting device comprising at least one moving target having a programmable shape and trajectory, said target being displayed on an appropriate screen, visible by both eyes, during the examination period. In the same field of endeavor, Agonis et al. discloses a sighting device comprising at

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least one moving target having a programmable shape and trajectory, said target being displayed on an appropriate screen, visible by both eyes, during the examination period (col. 8, lines 35-45). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the system of Fercher and Wei et al. with a sighting device comprising at least one moving target having a programmable shape and trajectory, said target being displayed on an appropriate screen, visible by both eyes, during the examination period of Agonis et al. for the purpose of providing the desired stimuli for the eyes in order to obtain desired analysis results.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MAHIDERE S. SAHLE whose telephone number is (571)270-3329. The examiner can normally be reached on Monday thru Thursday 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571 272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MSS  
9/29/2008

/Ricky L. Mack/  
Supervisory Patent Examiner, Art Unit 2873